

**CSI PROJECT
MILL CREEK / GREEN RIVER
SUBREGIONAL PLANNING AREA**

**TASK 210 REPORT
TASK 220 REPORT
TASK 230 REPORT**

February 2000



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KING COUNTY CONVEYANCE SYSTEM IMPROVEMENT PROJECT

MILL CREEK / GREEN RIVER SUBREGIONAL PLANNING AREA

TASK 210 REPORT

PLANNING RECORD SUMMARY

February 2000



KING COUNTY
Department of Natural Resources

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INTRODUCTION

This report describes the identification and evaluation of specific King County regional wastewater conveyance system issues related to capacity limitations and the system improvements or additions required to eliminate those limitations. Consideration has been extended to local service issues and projected growth.

In October 1998, the Soos Creek Water and Sewer District (WSD) requested that King County consider funding improvements that would increase conveyance capacity in the Soos Creek WSD Kent–Cascade Interceptor and assume ownership of that interceptor. The district also requested King County commitment to construct a regional pump station to replace its Lift Station 10. This latter commitment would begin with King County purchase of a specific property acquired by the Soos Creek WSD for the purpose of constructing the pump station.

The pattern of growth and development within the Soos Creek WSD has resulted in construction of a wastewater collection and conveyance system that relies on numerous pump stations. The system has substantially deviated from the conveyance system that was presented in the *1958 Metropolitan Seattle Sewerage and Drainage Survey* (the 1958 Plan) and resulted in overloading of the Mill Creek Interceptor. The Mill Creek relief sewer was planned for service to specific areas consistent with the current geography of conveyance, with the goal of reducing the overload on the Mill Creek Interceptor. There remains some question whether King County's southern Soos basin should also be served by future pump stations or by an eventual gravity system as envisioned in the 1958 Plan. It should be noted that the 1958 Plan included a pump station to be built on the east side of the Green River, to pump all the flow collected by gravity from the east portion of the Green River Sewerage Area north to a point on the Auburn Interceptor between the Mill Creek Interceptor and the Mill Creek Relief Interceptor.

More recent growth and planning decisions have also altered the regional service area by extending service to the Maple Valley and Black Diamond communities. Farther south, the pressures of growth have led to extension of wastewater service into Pierce County. Growth in the cities of Auburn, Algona, and Pacific will lead to increased flows into the regional conveyance facilities, whose capacity is predicted to be exceeded under storm conditions within the next few years.

Figure 210-1 shows the south King County sewer service area and facilities, including the M Street Trunk, N Sewer Interceptor, Algona–Pacific Interceptor, West Valley Interceptor, Auburn West Valley Gravity Sewer, Auburn West Interceptor, Auburn Interceptor Sections 1, 2, and 3, West Hill Trunk, ULID No. 1 Contract No. 4 Kent Interceptor, ULID 250 Kent Interceptor, Kent Cross Valley Interceptor, Mill Creek Trunk, and the South 277th Street Trunk now in construction. The figure highlights storm-affected facilities and shows the Soos Creek WSD Kent–Cascade Interceptor. Regional Wastewater Services Plan (RWSP) King County basins as delineated in the *1994 RWSP—Wastewater 2020 Plus, Existing Conditions* are also shown.

The urban growth area (UGA) boundary, adopted by King County in response to the state Growth Management Act (GMA), has excluded some areas included in the 1958 service area.

These changes and future growth projections have spurred development of local sewerage systems within the Subregional Planning Area and will be the source of future demands upon the regional conveyance system.

In view of the specific but complex issues and facilities considered in this study, a Subregional Planning Area has been defined for purposes of fully evaluating service alternatives. The planning area, called the Mill Creek / Green River Subregional Planning Area, is shown in Figure 210-2. All areas within the 1998 urban growth area that are tributary to the Kent Cross Valley Interceptor are included in this planning area.

The sections below describe the Mill Creek / Green River Subregional Planning Area (MC/GR) in relation to existing regional and local wastewater service areas. The Mill Creek / Green River Subregional Planning Area includes all sewer basins tributary to the Kent Cross Valley Interceptor and ULID 1/2 manhole #52 located in Kent. The description includes growth management impacts and local sewer service area boundaries, size, location, and population. Service area boundary changes and impacts are discussed. The 1958 Plan and amendments are compared to current planning in the Mill Creek / Green River Subregional Planning Area. There are no RWSP plan coordination issues in this planning area.

In a subsequent section, a brief summary of pertinent planning documents is presented to provide a historical reference for the Mill Creek / Green River Subregional Planning Area. Factors that have contributed to long-term service planning for this area are discussed. Potential inconsistencies between these planning documents and the King County RWSP are noted.

Maps presented throughout this study show significant changes between the original and current service areas.

REGIONAL WASTEWATER SERVICE AREA

King County and seven other planning authorities, including six cities and one water and sewer district, have planning jurisdiction within the Mill Creek / Green River Subregional Planning Area. Within the planning area, local service agencies provide local wastewater collection and convey flow to King County regional facilities. The urban growth area, as identified in the *King County Comprehensive Plan*, defines the eastern boundary of the planning area. The urban growth area includes incorporated cities, developing suburbs, and most of the county's population and economic base. Most of King County's past growth has occurred in its cities and in unincorporated urban areas. Because future growth is encouraged in these areas, sewer service is limited to the urban growth area.

The Mill Creek / Green River Subregional Planning Area includes all or part of the incorporated municipalities of Kent, Auburn, Algona, Black Diamond, Pacific, Covington, and Maple Valley. Figure 210-3 shows the city boundaries within the Mill Creek / Green River Subregional Planning Area and the 1998 urban growth area.

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**Figure 210-1. South King County Sewer Service Area and Facilities with 1995 Vision 1
Storm Impacted Facilities and Soos Creek Water and Sewer District Kent–
Cascade Relief Interceptor**

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Figure 210-2. Mill Creek / Green River Subregional Planning Area (MC/GR)

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Figure 210-3. Cities in the Mill Creek / Green River Subregional Planning Area

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Local sewer service providers include the cities of Kent, Auburn, Algona, and Pacific, as well as the Soos Creek Water and Sewer District, which serves portions of unincorporated King County, Covington, and Maple Valley. Sewer service agency and district boundaries are generally different from city limit boundaries and actual areas served. Figure 210-4 shows the sewer service agency boundaries of each local sewer service provider within the Mill Creek / Green River Subregional Planning Area, including Algona, Auburn, Black Diamond, Kent, Pacific, and Soos Creek Water and Sewer District. Comprehensive plans of local sewer service agencies and districts generally include service areas larger than the areas within their boundaries. Local service agencies serve areas inside the boundaries of other service agencies under interlocal agreements.

1958 PLAN

The *1958 Metropolitan Seattle Sewerage and Drainage Survey* set forth a comprehensive plan to provide gravity sewer service supported by a minimal number of pump stations to a large portion of the Mill Creek / Green River Subregional Planning Area. The 1958 Plan was amended in 1973 by the *Comprehensive Sewage Disposal Plan, Green River Sewerage Area and Portion of White River Watershed* to include additional area within the Mill Creek / Green River Subregional Planning Area. Figure 210-5 shows the 72 local service areas and the major sewer lines proposed by the plan within the Green River Sewerage Area as defined in the 1958 Plan. The 1998 urban growth area boundary is also shown. Excluding the Lake Youngs watershed, approximately 71,580 acres is included in the 1958 Green River Sewerage Area. The service area includes parts of the cities of Algona, Auburn, Kent, Renton, and Tukwila. The eastern portion drains toward Big Soos Creek, a principal tributary of the Green River.

CURRENT KING COUNTY SERVICE BASINS

Figure 210-6 shows the RWSP King County sewer basins as delineated in the *1994 Regional Wastewater Services Plan—Wastewater 2020 Plus, Existing Conditions* report, major facilities, and existing county sewer lines. All or part of several RWSP King County service basins in the south King County service area are within the planning area, including 250N, 250S, ALGONA, AUB2, AUB3, COVINGTON, FWAUB3, FWNE, GARR, JENKINS, KENTXVAL, LAKE LAND HILLS, MILL, MSTTRK, PACIFIC, SEGREEN, SOOSE, SOOSMILL, SOUTHERN SOOS, ULID C5E, ULID4, WHILL, WHITERIVER, and WINT.

Figure 210-7 shows the King County major facilities as well as the 1958 Plan Green River Sewerage Area and facilities. There are several major changes as a result of planning since 1958. The 1998 urban growth area precluded sewer service to much of the eastern portion of the 1958 Sewerage Area and added some area in southeast Auburn, all of Black Diamond, half of Pacific, and some area of Maple Valley. The 1958 Plan routed an interceptor along the eastern side of the Green River in Auburn, but (by amendment) the M Street Trunk was built on the western side. The 1958 Plan routed all flow from Soos Creek WSD south through Auburn, with a pump station located near the Green River. Existing facilities pump flow from the Soos Creek WSD and Black Diamond west to regional conveyance facilities.

Figure 210-8 compares sewer agency and city boundaries.

UNINCORPORATED KING COUNTY

A few areas of unincorporated King County within the urban growth area are located in the Mill Creek / Green River Subregional Planning Area. Those areas are shown on Figure 210-8. Two unincorporated King County areas east of the city of Auburn are served by Auburn. The following unincorporated King County areas have no designated sewer service provider: two areas south of Kent, one area east of Auburn and one west of Auburn, and four areas southwest and north of Black Diamond.

URBAN GROWTH AREA

In response to the state Growth Management Act, the *King County Comprehensive Plan* defined an urban growth area, which generally reduced the 1958 planning area. The urban growth area boundary eliminates much of the eastern and southeastern portion of the 1958 planning area but adds some new areas in east Auburn, Black Diamond, and Maple Valley. The Mill Creek / Green River Subregional Planning Area has been defined entirely within the urban growth area. Figure 210-5 shows the 1958 Plan Green River Sewerage Area and the 1998 urban growth area boundary.

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Figure 210-4. Sewer Agencies in the Mill Creek / Green River Subregional Planning Area

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Figure 210-5. 1958 Plan: Green River Sewerage Area, Local Service Areas, and Service Sewers

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Figure 210-6. King County RWSP Sewer Basins and Interceptors in the Mill Creek / Green River Subregional Planning Area

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**Figure 210-7. Comparison of 1958 Plan Green River Sewerage Area and Service Sewers
with Current King County Service Area and Interceptors**

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Figure 210-8. Comparison of Sewer Agency and City Boundaries

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LOCAL WASTEWATER SERVICE AREAS

ALGONA

The following information was provided by King County from its geographic information system (GIS) database.

SERVICE AREA

The city of Algona is located in the southwestern portion of the Mill Creek / Green River Subregional Planning Area, west of Auburn and north of Pacific. Figure 210-9 shows the Algona service area and sewers. The Algona service area is approximately 860 acres.

BASINS

The King County service basin of Algona coincides approximately with the Algona local sewer service provider boundary.

AUBURN

The following information is from the *Comprehensive Sewerage Plan for the Sewage Collection System, City of Auburn, Washington, 1979*, dated March 1982 (prepared by URS Company), and the King County GIS database.

SERVICE AREA

The city of Auburn is located in the southwestern portion of the Mill Creek / Green River Subregional Planning Area, east of Algona and Pacific. Figure 210-9 shows the Auburn service area, pump stations, and sewers. The service area includes large areas east of the Auburn city limits, parts of which lie within the city of Kent. The service area does not include a few small areas in north and west Auburn. In 1982, the Auburn service area was approximately 12,480 acres and served about 25,725 people.

BASINS

City of Auburn sewer service basins, as defined by the last Auburn sewer comprehensive plan, are generally subbasins within larger King County service basins. ALGONA, AUB3, FWNE,

MSTTRK, SE GREEN, SOUTHERN SOOS, WHITE RIVER, and WINT are the King County basins that coincide, at least partially, with the Auburn subbasins. Direction of flow from local basins is the same as for King County basins, except that the *King County Mill Creek Relief Sewer Planning Study* proposed to route part of SOUTHERN SOOS basin north through the Mill Creek Relief Interceptor corridor.

The King County GIS coverage shows a slightly different service area for Auburn than is shown in the city's comprehensive plan. According to the sewer comprehensive plan, the south service area extends into Pierce County, part of southeast Auburn is not in the service area, and areas on the east and north are not in the service area.

In terms of study area, the Auburn sewer comprehensive plan includes the entire King County defined service area plus Algona, Pacific, parts of Federal Way, and areas outside the urban growth area boundary.

BLACK DIAMOND

The following information is from the *Enumclaw-Black Diamond Regional Sewerage Study* dated June 1970 (prepared by Metropolitan Engineers); *Facility Plan for Wastewater Treatment System*, June 1988; *Comprehensive Sewerage Plan*, October 1988 (prepared by Brown and Caldwell); as well as information provided by King County.

SERVICE AREA

The city of Black Diamond is located in the extreme southwestern portion of the Mill Creek / Green River Subregional Planning Area, south of Maple Valley and within the urban growth area boundary. Figure 210-10 shows the Black Diamond service area. GIS sewer coverage was not available. Black Diamond service area was approximately 2,300 acres and served about 1,265 people.

BASINS

Black Diamond is located within King County's COVINGTON service basin.

KENT

The following information is from the *City of Kent Comprehensive Sewerage Plan* dated December 1980 (prepared by URS Company) and the King County GIS database.

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Figure 210-9. Sewer Agencies and City Boundaries: Auburn, Algona, and Pacific

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**Figure 210-10. Sewer Agencies and City Boundaries: Black Diamond, Maple Valley,
and Soos Creek Water and Sewer District**

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SERVICE AREA

The city of Kent is located in the northwestern portion of the Mill Creek / Green River Subregional Planning Area, north of Auburn and west of Soos Creek Water and Sewer District. Figure 210-11 shows the Kent service area, pump stations, and sewers. The city of Kent is the designated sewer service provider for a portion of the area within the city boundaries. Areas not served by the city are served by others or have no designated wastewater collection service provider. Soos Creek WSD serves areas in the eastern part of Kent. Another small, isolated area of Kent is served by Auburn. An area in Kent west and south of Soos Creek WSD has no designated wastewater collection service provider. There is another large area in the northwestern part of Kent that has no designated wastewater collection service provider. In 1980, the Black Diamond service area was approximately 9,700 acres and served about 39,294 people.

BASINS

City of Kent sewer service basins are generally subbasins within larger King County service basins. AUB2, GARR, KENTXVAL, MILL, ULID1, TUKWILA SOUTH, ULID/C2, ULID 1/C2, ULID4, ULID/C5E, WHILL, 250N, and 250S are the King County basins that coincide, at least partially, with the Kent subbasins. Direction of flow from local basins is the same as for King County basins.

The King County GIS coverage shows a slightly different service area for Kent than is shown in the city sewer comprehensive plan. According to the sewer comprehensive plan, existing Kent sewers extend to the Green River on the west. There are existing sewers south in a strip east of state route (SR) 167, but not the strip west of SR 167 as shown by King County. The sewer comprehensive plan also shows a few other small areas as having existing Kent sewers.

In terms of study area, the Kent sewer comprehensive plan includes all of the service area as defined by King County plus additional areas on the south, northwest, and east.

PACIFIC

The following information is from the *City of Pacific Sanitary Sewer System Plan* dated March 1991 (prepared by Gardner Consultants, Inc.) and the King County GIS database.

SERVICE AREA

The city of Pacific is located in the southwestern portion of the Mill Creek / Green River Subregional Planning Area, west of Auburn and south of Algona. Figure 210-9 shows the

Pacific service area and sewers. The service area extends beyond the city limits on the west. In 1991, the Pacific service area was approximately 1,245 acres and served about 5,186 people.

BASINS

City of Pacific sewer service basins are generally subbasins within the larger King County service basin of PACIFIC. MSTTRK, WHITE RIVER, and WINT are other King County service basins that also coincide partially with the city of Pacific basins. Direction of flow from small local basins is dictated by pump stations but overall is the same as for PACIFIC and WHITE RIVER basins. The service area southeast of the White River is part of WHITE RIVER basin and is routed through Auburn.

The King County GIS coverage shows a slightly different service area for Pacific than is shown in the city sewer comprehensive plan. According to the sewer comprehensive plan, the southeastern corner of Pacific and two areas within Algona are included in the service area.

In terms of study area, the Pacific sewer comprehensive plan includes all of the service area as described above, plus a potential annexation area in Pierce County.

SOOS CREEK WATER AND SEWER DISTRICT

The following information is from the *1996 Soos Creek Water and Sewer Plan* dated January 1997 (prepared by Hedges & Roth Engineering, Inc). and the King County GIS database.

SERVICE AREA

The Soos Creek WSD is located in the northeastern portion of the Mill Creek / Green River Subregional Planning Area, east of Kent. Figure 210-12 shows the district service area, pump stations, and sewers. An area of Maple Valley has overlapping service from both the Soos Creek WSD and the Cedar River WSD. The Soos Creek WSD provides sewer service for Maple Valley, Covington, and portions of Kent, and also provides a specific capacity in its south end conveyance system to allow flow from Black Diamond to pass through the district to King County facilities. In 1996, the Soos Creek WSD service area was approximately 68,000 acres and served about 18,818 people.

Covington

The city of Covington is a newly incorporated municipality located in the eastern portion of the Mill Creek / Green River Subregional Planning Area, east of Kent and west of Maple Valley. Covington sewer service is provided by Soos Creek WSD. There is an area in the southwestern part of Covington that is not included in the Soos Creek WSD sewer comprehensive plan.

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Figure 210-11. Sewer Agencies and City Boundaries: Kent

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**Figure 210-12. Sewer Agency and City Boundaries: Covington and Soos Creek
Water and Sewer District**

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Maple Valley

The city of Maple Valley is a newly incorporated municipality located in the most easterly portion of the Mill Creek / Green River Subregional Planning Area, east of Covington. Maple Valley sewer service is provided by the Soos Creek WSD. There is an area in the southern part of Maple Valley that has no designated service provider.

BASINS

Soos Creek WSD sewer service basins, as defined by the last Soos Creek WSD comprehensive plan, are generally subbasins within larger King County service basins. AUB3, CEDAR MOL, CEDAR MAD, COVINGTON, JENKINS, MILL, SOOS CENT, SOOSE, SOOSRENT, SOOSN, SOOS MILL, SOUTHERN SOOS, and ULID 1/C2 are the King County service basins that coincide, at least partially, with the Soos Creek WSD subbasins. Direction of flow from local basins is the same as for King County basins, except that the *King County Mill Creek Relief Sewer Planning Study* proposed to route SOUTHERN SOOS basin north through the Mill Creek Relief Interceptor.

The King County GIS coverage shows a slightly different service area for Soos Creek WSD than is shown in the Soos Creek WSD sewer comprehensive plan. The Soos Creek WSD sewer comprehensive plan shows the district boundary on the west not extending into Kent, and the boundary on the east not extending beyond the urban growth area boundary. A few other scattered small areas are also excluded from the service area as defined by King County. The Soos Creek WSD sewer comprehensive plan includes in the district the area around Lake Sawyer, a small area north of Covington, and a small area east of Lake Meridian, which are not shown in the district by the King County GIS coverage. The district sewer comprehensive plan includes in the district the area shown by King County as having overlapping service with Cedar River Water and Sewer District.

In terms of study area, the Soos Creek WSD sewer comprehensive plan includes all of the service area as defined by King County plus areas between Lake Meridian and Kent, large areas east of Lake Meridian, an area east of Lake Sawyer, and a few other scattered small areas, including areas outside the urban growth area boundary.

PLANNING RECORD

The following planning documents provide a historical reference for the Mill Creek / Green River Subregional Planning Area. This section describes factors that have contributed to long-term service planning for this area. Figures throughout this study show significant changes between the original and current service areas. Potential inconsistencies between these planning documents and the King County RWSP are noted.

1958 METROPOLITAN SEATTLE SEWAGE AND DRAINAGE SURVEY

(March 1958, prepared by Brown & Caldwell)

The *1958 Metropolitan Seattle Sewage and Drainage Survey* (referred to here as the 1958 Plan) was developed for the city of Seattle, King County, and the Washington State Pollution Control Commission between 1956 and 1958 to provide a long-range plan for the collection, treatment, and disposal of wastewater from the metropolitan Seattle area. The need for a long-range wastewater management plan was based on the rapid population expansion in King County and the increasing pollution of Lake Washington and other local surface waters. The planning horizon for the 1958 Plan was 2030, which corresponded with the longest economic life of any of the facilities likely to be constructed, and the population forecasts on which the plan was based were developed through that year.

The 1958 Plan divided the metropolitan Seattle area into 12 distinct Sewerage Areas. The divisions were based primarily on geography and economics but also included factors such as political boundaries, population distribution, land use, and location and condition of existing facilities.

The report concluded that the most economic and efficient solution to sewerage problems in the metropolitan Seattle area would be to convey sewage from large areas to a single point or relatively few points for treatment and disposal. The local service areas would be sewered with 6-inch to 24-inch service sewers. The service criteria then (and now) required service to be financially justifiable and required each local service area to contain no less than 1,000 acres.

The service sewers were planned to contribute to large feeder sewers, trunks, and interceptors within the Sewerage Area. The feeder sewers from the individual Sewerage Areas would convey the sewage to a treatment plant that would receive flow from many Sewerage Areas. Treated sewage would be pumped from the plant to an outfall for disposal in a designated body of water.

Construction timing in the 1958 Plan was based on urgency of the required facilities (including sewer mains) as a result of population growth or the need for pollution mitigation. Population forecasts and distribution were used to estimate construction timing and treatment plan loadings. Construction was planned to occur in three stages. Stage I, scheduled for the period from 1960 to 1970, included facilities required to alleviate serious pollution and flow-loading problems. Stage II, planned for 1970 to 1980, included extension of the collection and conveyance system

to serve additional areas where the most rapid population growth was expected to occur. Stage III, scheduled for the period after 1980, included all remaining facilities required to serve further population growth. The original schedule of work was subsequently amended to four phases.

Under the revised first stage of treatment system improvements (1960 to 1970), 28 small treatment plants were closed, and 46 primary treatment discharge points into Lake Washington and Lake Sammamish were eliminated. Three new primary treatment plants began operations, ranging from 3.2 million gallons per day (mgd) (Richmond Beach and Carkeek Park) to 125 mgd (West Point). Secondary treatment facilities were constructed at the East Section Reclamation Plant at Renton, and more than 90 miles of large-diameter sewers, tunnels, and underwater pipelines were constructed.

The second stage of the plan (projects completed 1960 to 1990) was modified twice, in 1970 and in 1982. The second-stage plan included the following elements:

- East Section Reclamation Plant, West Point, and Alki treatment plant improvements
- Eastgate trunk sewer and Issaquah interceptor construction
- Auburn, West Valley, and Lake Sammamish interceptor construction
- Two major combined sewer overflow (CSO) control projects
- Kenmore pump station construction
- North interceptor rehabilitation
- Juanita pump station modification.

The third-stage project facilities, completed in 1991, included three major efforts:

- West Point and East Section Reclamation Plant upgrade projects
- Kenmore interceptor and Matthews Park pump station improvements
- Extension of North Creek and northeastern Lake Sammamish interceptors.

Subsequently, a fourth stage of wastewater projects was added, consisting of more than a dozen projects scheduled through 1997. Elements of the fourth-stage plan continued King County's move away from a decentralized system of several smaller treatment plants to a centralized system characterized by secondary treatment and only two large plants, at Renton (the East Section Reclamation Plant) and West Point. The Richmond Beach plant was replaced with a pump station, and Alki and Carkeek facilities were converted to stormwater facilities with transfer of base sanitary flows to the West Point plant. Other fourth-stage projects include pump stations, regulators, tunnels, and conveyance and separation facilities.

COMPREHENSIVE SEWAGE DISPOSAL PLAN, GREEN RIVER SEWERAGE AREA AND PORTION OF WHITE RIVER WATERSHED

(November 1973, prepared by Metropolitan Engineers, Consulting Engineers)

Resolution No. 2025 adopted this amendment to the *King County Comprehensive Plan*. It extended the comprehensive plan study area to include a portion of the White River watershed, added new King County facilities in the expanded area, and revised some sewer basins and alignments in the Mill Creek / Green River Subregional Planning Area.

WASHINGTON GROWTH MANAGEMENT ACT

As part of its planning process, King County must meet the requirements of the 1990 state Growth Management Act. This law directs affected counties, including King County, to develop comprehensive growth management plans to define urban growth boundaries and to ensure that facilities and services needed to sustain growth are in place when required. Implementation of the sewer comprehensive plans includes making capital investments, regulating land uses, and identifying and protecting environmentally sensitive areas and resource lands. The Growth Management Act directs counties and cities to adopt jointly prepared “county-wide planning policies.” These regional policies are frameworks around which counties and cities develop sewer comprehensive plans.

King County’s vision of the future, embodied in its *County-Wide Planning Policies*, was developed by the King County Growth Management Planning Council (GMPC), which consists of the King County executive, five members of the Metropolitan King County Council, three representatives of the city of Seattle, six representatives from the suburban cities, and one ex-officio member representing the Port of Seattle. The *County-Wide Planning Policies* address issues such as siting of facilities, as well as timing and phasing of land development in concert with facilities and services. The King County Council adopted the *County-Wide Planning Policies* by Ordinance No. 10450 on July 6, 1992.

One of the major goals of the Growth Management Act is concurrency. Concurrency is defined to mean that, to the extent possible, specific infrastructure systems are in place at the same time development occurs. The concurrency goal is intended to make sure that development (population and employment growth) occurs initially in areas that have urban services available. If the infrastructure will not be in place to accommodate a minimum of 20 years of projected growth, the Growth Management Act requires that either land use, financing mechanisms, or levels of service be reassessed. This reassessment ideally results in a balance of capital facilities, land use planning, and financing, and hence a concurrent accommodation of growth. Strict concurrence is required only for transportation elements but is a goal for all other infrastructure elements as well.

Concurrency for King County wastewater facility planning means that if sewer conveyance and treatment system infrastructure is not in place when needed, then levels of service (such as numbers of combined sewer overflows, discharge limits, or infiltration and inflow accommodation) should be reassessed.

KING COUNTY COMPREHENSIVE PLAN, EXECUTIVE PROPOSED PLAN

(June 1994, prepared by King County Parks, Planning and Resources Department)

The Metropolitan King County Council established an urban growth area in the 1994 *King County Comprehensive Plan* (KCCP) and the 1995 amendment. Future growth and development should be confined to the urban growth area, as defined by the urban growth boundary, to limit urban sprawl, enhance open space, protect rural areas, and provide for more efficient use of human services, transportation, and utilities. The *King County Comprehensive Plan* includes capital facilities and utilities elements that contain a review and approval process for sewer plans within the county. King County's regional wastewater conveyance and treatment system and facilities are specifically included in the adopted comprehensive plan (provided in Volume One of the Technical Appendices).

The *King County Comprehensive Plan* indicates that within the urban growth area, construction of public sewers is encouraged, to allow the maximum density to be achieved. Public sewers should be provided to replace onsite treatment systems. The *County-Wide Planning Policies* restrict public sewer expansions in rural areas and on natural resource lands unless they are tightlined (no service laterals permitted) and a finding is made that no reasonable alternative technologies are feasible.

Ultimately, the *King County Comprehensive Plan* would confine concentrated development to the urban growth area, where services are already provided, or would require service to be provided concurrently with development. This can be accomplished by changing development patterns and zoning and by offering incentives to direct growth within the urban growth area.

KING COUNTY REGIONAL WASTEWATER SERVICES PLAN

(January 1996, prepared by King County Wastewater Treatment Division)

The *Regional Wastewater Services Plan* (RWSP) is the King County long-range planning road map defining the strategy for providing regional wastewater services in the Seattle metropolitan area. The RWSP scope is comprehensive in nature, addressing wastewater treatment and conveyance needs, the combined sewer overflow control program, the biosolids management program, and opportunities for water reuse. The policies guiding the provision of wastewater services, as well as the programmatic initiatives and facilities needed to address those services, comprise the plan. The RWSP does not specifically examine the Subregional Planning Area drainage.

KING COUNTY RWSP—WASTEWATER 2020 PLUS, EXISTING CONDITIONS

(August 1994, prepared by HDR Engineering, Inc.)

As part of a planning project to assess the long-term wastewater conveyance and treatment needs of King County, the *Wastewater 2020 Plus, Existing Conditions* report described capacity and limitations of existing wastewater conveyance and treatment facilities through 1996. The report determined the impacts of infiltration and inflow and provided alternatives for management of infiltration and inflow. The study developed wastewater flow projections and forecast conveyance and treatment facility needs based on population forecasts reflecting 1990 census data, economic conditions, and growth management visions. Wastewater conveyance and treatment needs were examined in a broad regional context to assess mutually beneficial opportunities for service arrangements with other counties. The study provided planning level analysis of system conveyance and treatment facility needs.

KING COUNTY RWSP—WASTEWATER 2020 PLUS, SOUTH INTERCEPTOR PARALLEL VALIDATION STUDY

(March 1993, prepared by HDR Engineering, Inc.)

The *South Interceptor Parallel Validation Study* established a planning area called the Metro South Interceptor Basin. All flow that enters the King County treatment plant at Renton from the south originates within this basin. Planning areas for two urban growth boundaries were evaluated. One urban growth area was defined by the 1985 *King County Comprehensive Plan*, and the other was defined by the Growth Management Policy committee as adopted by the King County Council on July 16, 1992. For that planning area, the study describes population and flow characteristics and projects flow to 2030 and at saturation for the hydrologic basins. The study used 1990 census and Puget Sound Regional Council (PSRC) data for population, employment, and land use.

KING COUNTY DEPARTMENT OF NATURAL RESOURCES, WASTEWATER TREATMENT DIVISION, FINAL REPORT—MILL CREEK RELIEF SEWER PLANNING STUDY

(March 1998, prepared by Garry Struthers Associates, Inc., HDR Engineering Inc., PacRim Geotechnical, Inc., and Caribe Engineers, Inc.)

The *Mill Creek Relief Sewer Planning Study* evaluated possible pipeline routes for the Mill Creek Relief Interceptor project. King County's existing Mill Creek Interceptor, which serves Soos Creek Water and Sewer District, the city of Black Diamond, and the city of Kent, is under capacity and as a result can overflow during large storm events. Review of Soos Creek WSD flow data resulted in a significant reduction in King County infiltration and inflow estimates for the area served by Soos Creek WSD. Twenty-year peak flow at saturation was estimated at 36–39 mgd east of the Green River and 51–54 mgd west of the river.

The study recommended construction of a 40-mgd Mill Creek Relief Interceptor, a 15-mgd parallel interceptor west of the Green River, and a pump station. The proposed 40-mgd capacity

Mill Creek Relief Interceptor is routed east from the Auburn Interceptor along South 277th Street to 114th Avenue, then north to the Soos Creek WSD Kent–Cascade Relief Interceptor. The proposed 15-mgd capacity parallel interceptor is routed east from the Auburn Interceptor to the west bank of the Green River. The proposed pump station would be constructed in Southern Soos basin and would pump to the 150-mgd parallel interceptor at the Green River.

COMPREHENSIVE SEWERAGE PLAN FOR THE SEWAGE COLLECTION SYSTEM, CITY OF AUBURN, WASHINGTON, 1979

(March 1982, prepared by URS Company)

The Auburn *Comprehensive Sewerage Plan for the Sewage Collection System* established a planning area and discussed and evaluated existing conditions. The plan also identified system requirements, recommended improvements, and proposed a plan for implementation of improvements.

CITY OF KENT COMPREHENSIVE SEWERAGE PLAN

(December 1980, prepared by URS Company)

The *City of Kent Comprehensive Sewerage Plan* established a planning area and discussed and evaluated existing conditions. The plan also identified system requirements, recommended improvements, and proposed a plan for implementation of improvements.

CITY OF PACIFIC SANITARY SEWER SYSTEM PLAN

(March 1991, prepared by Gardner Consultants, Inc.)

The *City of Pacific Sanitary Sewer System Plan* established a planning area that included a proposed expansion of service into Pierce County. The plan discussed and evaluated existing conditions, identified system requirements, recommended improvements, and proposed a plan for implementation of improvements.

1996 SOOS CREEK WATER AND SEWER DISTRICT COMPREHENSIVE SEWER PLAN

(January 1997, prepared by Hedges & Roth Engineering, Inc.)

The *Soos Creek Water and Sewer District Comprehensive Sewer Plan* established a planning area, discussed and evaluated existing conditions, and discussed operations and maintenance. The plan also identified system requirements, recommended improvements, and proposed a plan for implementation of improvements.

ENUMCLAW–BLACK DIAMOND REGIONAL SEWERAGE STUDY

(June 1970, prepared by Metropolitan Engineers)

The *Enumclaw–Black Diamond Regional Sewerage Study* established a planning area and discussed and evaluated existing conditions. The study also identified system requirements, recommended improvements, and proposed a plan for implementation of improvements.

CODIFICATION OF METRO’S COMPREHENSIVE SEWERAGE PLAN

(November 1989, prepared by Brown & Caldwell)

This is a summary document of the 1958 Plan and amending resolutions from 1961 through 1989. These amendments implemented the original plan and made some changes to it. Resolution No. 928, adopted in June 1967, revised sewer alignments in Kent. Resolution No. 1330, adopted in December 1969, modified the *Comprehensive Sewerage Plan* to better reflect development in the Green River Sewerage Area. Resolution No. 2025, adopted in February 1974, extended the study area to include a portion of the White River watershed, added facilities in that area, and modified previously planned facilities. Resolution No. 2795, adopted in December 1996, addressed the "West Valley, Ellingson, and Lakeland Service Area," which includes portions of FWNE, WHITE RIVER, PACIFIC, ALGONA, and WINT service basins.

BLACK DIAMOND FACILITY PLAN FOR WASTEWATER TREATMENT SYSTEM

(June 1988, prepared by Brown & Caldwell)

This plan developed and evaluated alternative projects for transferring wastewater to the King County system for treatment and disposal. The selected project was developed in detail and implementation requirements were identified. The transfer project replaced a failed treatment facility constructed under the EPA Innovative and Alternative (I&A) Treatment Program.

CITY OF BLACK DIAMOND COMPREHENSIVE SEWERAGE PLAN

(October 1989, prepared by Brown & Caldwell)

This study identified wastewater management needs and evaluated several alternatives for improving or eliminating the city's wastewater discharge to Rock Creek, a tributary to Lake Sawyer. Treatment facility improvements, land application of effluent, and transfer of wastewater flow to King County for treatment were evaluated, and the flow transfer alternative was selected. Several alternative pipeline alignments were identified and evaluated. The selected transfer option conveyed flow into the Soos Creek WSD, with the discharge into the Soos Creek WSD Covington Pump Station (Lift Station 11).

KING COUNTY CONVEYANCE SYSTEM IMPROVEMENT PROJECT

MILL CREEK / GREEN RIVER SUBREGIONAL PLANNING AREA

TASK 220 REPORT

EXISTING FACILITIES

February 2000

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INTRODUCTION

This section describes existing and proposed sewerage facilities within the Mill Creek/ Green River Subregional Planning Area . The discussion is divided into King County's regional facilities and facilities owned by local service agencies (local sewer agencies).

REGIONAL FACILITIES

King County owns and operates several wastewater pump stations, interceptors, and trunk sewers in the Mill Creek / Green River Subregional Planning Area (MC/GR). Figure 210-6 shows the King County facilities in the MG/CR. Wastewater facilities are located in King County's East Section service area, which contains approximately 90,000 sewered acres, extending from Juanita/Kirkland and Woodinville in the north to just north of the Pierce/King County border. All East Section flow is treated at the East Section Reclamation Plant (ESRP) in Renton. This section describes key King County facilities that serve the Mill Creek / Green River Subregional Planning Area.

WASTEWATER TREATMENT FACILITIES

There are no wastewater treatment facilities in the Mill Creek / Green River Subregional Planning Area.

CONVEYANCE FACILITIES

King County owns the Clark Fork Trunk and the North Soos Trunk in the Soos Creek Water and Sewer District (Soos Creek WSD). In Auburn, the county owns the M Street Trunk, N Sewer Interceptor, Algona–Pacific Interceptor, West Valley Interceptor, Auburn West Valley Gravity Sewer, Auburn West Interceptor, and Auburn Interceptor Sections 1 and 2. In Kent, King County owns the West Hill Trunk, ULID No. 1 Contract No. 4 Kent Interceptor, ULID 250 Kent Interceptor, Kent Cross Valley Interceptor, Auburn Interceptor Section 3, Mill Creek Trunk, South Interceptor (in construction) and South 277th Street Trunk (in construction).

PUMP STATIONS

Table 220-1 lists and describes the major pump stations relevant to regional sewer service in the Mill Creek / Green River Subregional Planning Area. The Pacific Pump Station serves the King County sewer basin of Pacific, which includes most of the city of Pacific, except for the area east of the White River. The city has annexed areas on the south and west and plans to route flow from them to this pump station. Black Diamond Pump Station serves the King County sewer basin of Covington, which includes the city of Black Diamond. It pumps flow to Soos Creek WSD Lift Station 11. Lakeland Hills Pump Station serves the King County sewer basins of White River and Lakeland Hills.

Table 220-1. Pump Stations Significant to Regional Sewer Service in Mill Creek/Green River Subregional Planning Area

Name (Number) and Location	Type of Station	Number of Pumps	Pump Rate (gpm)	Pump Size (inches)	Force Main Size (inches)	Destination	Emergency Power	Year Built	Remarks	TDH (feet)
<u>KING COUNTY</u>										
Lakeland Hills	Dry/wet	2	#1 – 5000 #2 – 7360		12	Lakeland Hills Force Main	Portable	1982	Space for a third pump; parallel 20-inch force main not used.	
Black Diamond Pacific	Dry/wet	2	#1 – 660 #2 – 660		12	Algona–Pacific Trunk				27.5
<u>CITY OF AUBURN</u>										
22 nd Street	Dry/wet		550			M Street Trunk		<1979		50
8 th Street	Dry/wet		100			M Street Trunk		<1979		11
D Street	Dry/wet					Auburn Interceptor		<1979		26.5
Dogwood	Dry/wet		200			M Street Trunk		<1979		30
Ellingson Road (A Street)	Dry/wet		500			Lakeland Hills Force Main		<1979		52
F Street						M Street Trunk		<1979	Replaced at adjacent site since 1979.	20
R Street	Dry/wet		100			M Street Trunk		<1979		15
Riverside						M Street Trunk		>1979		
<u>CITY OF KENT</u>										
Horseshoe Acres	Dry/wet	2	#1 – 650 #2 – 650			Auburn Interceptor		<1980	Upgraded to 2,000 gpm and new motors, impellers, and electrical.	
7942 S 261 st Street						S 277 th Trunk			Upgrading in progress to eliminate upstream pump stations.	
Soosette Creek										
11808 SE 256 th Street										
Linda Heights			330			West Hill Interceptor	Onsite			
3406 S 248 th Street										
<u>CITY OF PACIFIC</u>										
5 th Avenue SW & Tacoma	Dry/wet	2	#1 – 250 #2 – 250			Pacific Pump Station				42
West Cedar Glen	Dry/wet	2	#1 – 121 #2 – 121			Pacific Pump Station.				20
Sundown Meadows	Dry/wet	2	#1 – 250 #2 – 250			Pacific Pump Station				16.6
										6.6

Table 220-1. Pump Stations Significant to Regional Sewer Service in Mill Creek/Green River Subregional Planning Area
(continued)

Name (Number) and Location	Type of Station	Number of Pumps	Pump Rate (gpm)	Pump Size (inches)	Force Main Size (inches)	Destination	Emergency Power	Year Built	Remarks	TDH (feet)
SOOS CREEK WATER AND SEWER DISTRICT										
Lift Station 10 Clark Fork 14321 SE 255 th Place	Dry/wet	3	#1 – 2500 #2 – 2500 #3 – 3300	8 10 10	16	West to Kent–Cascade Relief Interceptor then to Mill Creek Interceptor (will flow to 277 th Trunk when it is completed)	Onsite		1991–1993: #1 and #2, new pump and motor; #3, new motor. Future: upgrade/relocation to Lift Station 10B site planned.	
Lift Station 11 Covington 18401 SE Timberlane Boulevard	Dry/wet	3	#1 – 1700 #2 – 3200 #3 – 3200	8 8 10	14	West to Kent Cascade Relief Interceptor then to Mill Creek Interceptor (will flow to 277 th Trunk when it is completed)	Onsite		1992: ventilation modified; #1 and #3, new motors and controls; 1996: #2, new pump, motor, and controls. Future: 400,000-gallon emergency storage planned.	
Lift Station 14 Crystal View SE 256 th Street & 171 st Avenue SE	Dry/wet	2	#1 – 500 #2 – 500	4 4	6	West to Lift Station 10	Portable			
Lift Station 15 Cedar Downs 25331 Witte Road SE Lift Station 15B Maple Valley 24006 215 th Avenue SE	Dry/wet	2	#1 – 900 #2 – 900	4 4	6	West to Lift Station 11	Onsite		1990: #1 and #2, motors replaced, station remodeled, to be replaced by Lift Station 15B.	

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the sewer comprehensive plan defined by the *1958 Metropolitan Seattle Sewerage and Drainage Survey* (the 1958 Plan) and subsequent amendments adopted by resolution.

ISSUES AND PROBLEMS

A meeting of King County Wastewater Treatment Division personnel was held in December 1998 to discuss issues and problems in the East Section service area. Comments are summarized below.

M STREET TRUNK

No overflows have been reported from this gravity sewer but it is suspected of reaching hydraulic limits. This sewer appears on the list of storm-affected facilities.

PACIFIC PUMP STATION

It was suggested that the sewer comprehensive plan had recommended eliminating the pump station and extending a gravity line to serve that area. The amendment to the comprehensive plan that pertains to this area is the *Comprehensive Sewage Disposal Plan, Green River Sewerage Area and Portion of White River Watershed*, November 1973 (Resolution No. 2025). The amendment provides for an interceptor and pump station to serve the area. Participants stated that the pump station has reached the end of its useful life, does not meet confined space standards, and has reliability problems. There is no overflow bypass other than the street) and no standby or backup power. Participants indicated that no capacity issues have arisen, even though the Pacific/Algona sewers are very leaky and have high inflow and infiltration rates.

LAKELAND HILLS PUMP STATION

Participants reported that an elementary school at a low elevation has been affected twice by overflows. Problems noted include corrosion damage to the force main and wet well, lack of standby power or telemetry, and access that does not meet the standards of WSHA/OSHA (state and federal Occupational Safety and Health Administration). Pumps run constantly at full speed, indicating capacity and reliability concerns, and high infiltration and inflow are suspected.

LOCAL FACILITIES

There are no wastewater treatment facilities in the Mill Creek / Green River Subregional Planning Area . All wastewater is conveyed to the East Section Reclamation Plant at Renton.

ALGONA

Figure 210-9 shows the city boundaries and local service areas for the cities of Auburn, Algona, and Pacific. No information is available on conveyance facilities, pump stations, known rehabilitation requirements, planned system changes, ownership, or operation and maintenance of facilities for Algona.

AUBURN

The following information is from the *Comprehensive Sewerage Plan for the Sewage Collection System, City of Auburn, Washington, 1979* dated March 1982 (prepared by URS Company).

Service area boundaries shown in the sewer comprehensive plan differ significantly from King County's current boundary (see Figure 210-9). Auburn service basins can be roughly correlated to King County's *Regional Wastewater Services Plan* (RWSP). The service area extends beyond the 1958 plan boundary, and basins do not correlate well with each other.

All Auburn flow leaves the city through the Auburn Interceptor. Some flow enters the Auburn Interceptor directly. Other flows are routed first through the N Sewer Interceptor or the M Street Trunk.

CONVEYANCE FACILITIES

Approximately 82 miles of interceptor, trunk, and lateral sewers along with nine pump stations serve portions of 17 sewer basins. The quantity of flow through pump stations in 1979 was itemized in the sewer comprehensive plan.

PUMP STATIONS

See Table 220-1 for information on major pump stations in Auburn.

KNOWN REHABILITATION REQUIREMENTS

Rehabilitation requirements as defined by the 1979 sewer comprehensive plan are outdated.

PLANNED SYSTEM CHANGES

Three new pump stations were proposed: Riverside Avenue Pump Station serving Lee Hill, Second Street Pump Station serving the upper Green River basin and part of the Soos Creek basin, and Lakeland Hills Pump Station. The Dogwood Pump Station was to be replaced with a gravity main. The C Street Pump Station and D Street Pump Station are to be replaced by gravity sewers connecting to King County facilities. The E Street Pump Station is to be relocated.

OPERATION AND MAINTENANCE

Cleaning and video inspection of sewer pipes and manhole inspection are performed continuously, one quarter section at a time. In addition, temporary summer employees are hired to inspect manholes. All new sewers are video inspected before acceptance.

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the sewer comprehensive plan defined by the 1958 Plan and amendments subsequently adopted by resolution.

BLACK DIAMOND

Figure 210-10 shows the Black Diamond city boundary and local service area. The following information is from the *Enumclaw-Black Diamond Regional Sewerage Study* dated June 1970 (prepared by Metropolitan Engineers), *Facility Plan for Wastewater Treatment System* dated June 1988 and *Comprehensive Sewerage Plan* dated October 1988 (both prepared by Brown and Caldwell), in addition to information provided by King County.

CONVEYANCE FACILITIES

Flow collected in Black Diamond is pumped through approximately 40,000 lineal feet of force main and gravity conveyance pipeline to Lift Station 11 (Covington Pump Station) owned by Soos Creek WSD. Black Diamond flow is conveyed to the King County regional system through the Soos Creek sewer system under an agreement that limits service to 3,600 people (1 million gallons per day) in Black Diamond.

PUMP STATIONS

The city of Black Diamond operates and maintains a small pump station serving the Morganville area.

KNOWN REHABILITATION REQUIREMENTS

The city's agreement with Soos Creek WSD limits the extent of infiltration and inflow permissible in the system. This limit has been reported to be exceeded, which may trigger improvements to reduce infiltration and inflow. Black Diamond is contributing a share of the cost of the improvements to the Soos Creek WSD South End conveyance system along SE 256th Street.

COMPARISON TO 1958 PLAN

The Black Diamond service area was not included in the 1958 Plan Sewerage Area.

KENT

Figure 210-11 shows the Kent city boundary and local service area. The following information is from the *City of Kent Comprehensive Sewerage Plan* dated December 1980 (prepared by URS Company).

CONVEYANCE FACILITIES

According to the sewer comprehensive plan, Kent has approximately 445,000 feet of sewer pipe.

PUMP STATIONS

See Table 220-1 for information on major pump stations in Kent.

KNOWN REHABILITATION REQUIREMENTS

Many pipeline rehabilitation projects, mostly in the downtown Kent area, were planned for the 1980s. Upgrading of the Aero-Kent and Horseshoe Acres pump stations was also planned. System extensions to serve unsewered areas were planned under the developer extension process.

PLANNED SYSTEM CHANGES

Planned system changes as defined by the 1980 sewer comprehensive plan are outdated.

OPERATION AND MAINTENANCE

Cleaning and video inspection of sewer pipes and manhole inspection are performed continuously, one section at a time, with a goal of covering the entire system every five years. All new sewers are video inspected before acceptance.

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the sewer comprehensive plan defined by the 1958 Plan and amendments subsequently adopted by resolution.

PACIFIC

Figure 210-9 shows the Pacific city boundaries and local service area. The following information is from the *City of Pacific Sanitary Sewer System Plan* dated March 1991 (prepared by Gardner Consultants, Inc.).

The city of Pacific covers approximately 1,250 acres and may annex an additional 1,280-acre area to the south. The sewer service area covers approximately 1,342 acres. The city service area boundary differs a little from the King County service area boundary, mostly on the western side. There is one major drainage basin that includes three small subbasins served by lift stations, as well as area served by gravity. Flow from another basin southeast of the White River goes to Auburn. Another basin is located west of SR 167. The major city basin boundaries are approximately equal to the King County basin boundaries.

CONVEYANCE FACILITIES

The sewer comprehensive plan does not describe the conveyance facilities.

PUMP STATIONS

See Table 220-1 for specific information on pump stations in Pacific. The city owns and operates three pump stations: Sundown Meadows Pump Station serves a small area in the northeastern corner of the city. Fifth Ave SW & Tacoma Pump Station serves west Cedar Glen

and additional area in the southern part of the city. West Cedar Glen Pump Station serves a small area in the southern part of the city.

KNOWN REHABILITATION REQUIREMENTS

It is assumed that half of the sewer system is in need of immediate repair, and the remainder is assumed to need total replacement over a 20-year period. A video inspection program was started to prioritize rehabilitation efforts. The 4-inch asbestos-cement force main out of the Fifth Avenue SW & Tacoma Boulevard Lift Station must be replaced.

PLANNED SYSTEM CHANGES

According to the sewer comprehensive plan, the Fifth Avenue SW & Tacoma Boulevard Lift Station is to be replaced or relocated outside the Tacoma Boulevard roadway. The system hydraulic model predicts that Pacific Pump Station will surcharge, starting about 2005. As much as 25,000 linear feet of additional sewers are planned within the current service area. City annexation of additional area to the south would expand the service area. Four additional lift stations are planned. The two lift stations east of the White River are to be routed to Auburn's Lift Station A. As much as 18,000 linear feet of additional sewers are planned within the annexed service area.

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the sewer comprehensive plan defined by the 1958 Plan and subsequent amendments adopted by resolution.

SOOS CREEK WATER AND SEWER DISTRICT

The following information is from a letter dated October 29, 1998 from the Soos Creek WSD to King County and from the *1996 Soos Creek Water and Sewer Plan* dated January 1997 (prepared by Hedges & Roth Engineering, Inc.).

Figure 210-12 shows the Covington and Maple Valley city boundaries and local service areas, as well as the local service area for Soos Creek WSD. The Soos Creek WSD serves areas within the boundaries of Kent and Renton, but the majority of its service area is in urban unincorporated King County. Land use designations are predominantly residential (generally four to eight dwelling units per acre). The Soos Creek WSD has specific service agreements with Kent, Renton, Black Diamond, and Cedar River WSD, as well as an informal planning and service guideline agreement with Auburn.

The Soos Creek WSD is divided into three major service areas designated north, southeast, and southwest. The north system has many discharge points through other jurisdictions. There is only one discharge point for the southeast and southwest basins at this time. The major portion of new development is occurring in the two south service areas. The service areas are further divided into 21 drainage basins. The Soos Creek WSD basins can be correlated to the King County basins fairly well. Correlation is lower between Soos Creek WSD basins and 1958 Plan basins.

CONVEYANCE FACILITIES

According to the sewer comprehensive plan, the Soos Creek WSD maintains approximately 350 miles of gravity sewer ranging in size from 6-inch to 27-inch diameter. About 58 percent of the pipe is 8-inch diameter. Most of the system is concrete or reinforced concrete pipe, with newer pipe that is predominantly polyvinyl chloride (PVC). There are approximately 6,667 manholes.

Pipe capacity was analyzed in the 1996 sewer comprehensive plan for three timeframes: 1996 (current), 2015, and ultimate build-out (i.e., full development). Acceptability of surcharge was based on upstream consequences. In the north service area, no unacceptable surcharge was found for the 1996 analysis. In 2015, there will be $\pm 1,667$ feet of pipe with serious surcharge (Springbrook Interceptor). By build-out, there will be $\pm 1,982$ feet of pipe with unacceptable surcharge.

In the southeast and southwest service areas, surcharged lines identified in the 1996 analysis will have adequate capacity after the project to bypass Lift Station 11 is completed. For 2015, 5,400 feet of pipe showed unacceptable surcharge, but this should be alleviated by the South 277th Interceptor. By build-out, 7,447 feet show serious surcharge and another 4,888 feet show moderate surcharge.

There are about 22.4 miles of force mains. Approximately half the pipe is 6- to 12-inch diameter, and about 40 percent of the pipe is 14- to 20-inch diameter. Of the remaining pipe, about 6 percent is 22- to 30-inch diameter, and about 6 percent is 1.25- to 4-inch diameter force main.

Capacity of the South End conveyance system is estimated at 5.75 mgd.

PUMP STATIONS

See Table 220-1 for specific information on Soos Creek WSD pump stations. There are 24 functioning lift stations. Several stations have been designed to be relocated as necessary. Four stations (5B, 8, 9, and 12) serve the north service area, and the remainder are part of the southeast and southwest service areas. South area Lift Stations 10, 11, 14, and 15 do not have storage capacity to contain large wet-weather events or to store sewage during an emergency.

Those stations have a history of overflow. Pump stations have radio-based telemetry for monitoring from the district office.

KNOWN REHABILITATION REQUIREMENTS

It is anticipated that about 28 percent of the gravity sewer installed before the mid-1970s will need replacement in the next 10 to 15 years. In the north service area, the Lift Station 5B outfall must be repaired or replaced (involving 2,200 linear feet of 15- to 21-inch diameter pipe and 215 linear feet of 8-inch diameter gravity pipe).

PLANNED SYSTEM CHANGES

The following changes are listed in the sewer comprehensive plan for the south service area.

- The Soos Creek WSD proposes to replace approximately 1,000 linear feet of the Kent–Cascade Relief Interceptor. The 21-inch diameter pipe would be replaced with 27-inch diameter PVC pipe to increase capacity from 4,500 gallons per minute (gpm) to 7,500 gpm. This upgrade should provide adequate capacity until about the year 2005, based on predicted growth.
- Parts of the South End conveyance system would be reconfigured to minimize the number of times sewage is pumped and to increase capacity at selected lift stations. Recommended changes include construction of Lift Station 15B and a force main (16,300 linear feet of 18-inch pipe) to replace Lift Stations 15, 22, and 30. A 7,200-linear-foot gravity sewer would be constructed from Lift Station 15 to the new Lift Station 15B. Lift Station 10 would be relocated to become Lift Station 10B. A decant facility and 860,000 gallons of underground emergency storage would be built on the site. At Lift Station 11, 400,000 gallons of emergency storage would be constructed underground, and $\pm 1,100$ linear feet of 8- to 30-inch diversion sewer with manholes would be installed.
- A low-pressure force main with individual grinder pumps is proposed to serve Lake Sawyer. Lift Station 36 would be built to pump flow away from Lake Sawyer.
- Lift Station 19 would be removed when a gravity sewer is built as a developer improvement to serve the surrounding area. This area may be served by the city of Kent if the city can provide service first.

- When SE 272nd Street is widened, Lift Station 24B flow is proposed to be replaced with ± 500 linear feet of 10- to 12-inch gravity sewer through an area with severe ground water problems.
- Gravity pipe upstream from Lift Station 11 ($\pm 1,000$ linear feet) would be upsized to 12-inch diameter.

OPERATION AND MAINTENANCE

The Soos Creek WSD has a mutual aid agreement with other participating water and sewer districts to provide personnel and equipment to the other districts that request assistance during emergencies.

Maintenance is performed by Soos Creek WSD staff. Video inspection is required on all new pipe installations. There is no schedule for video inspection of existing pipes. Manholes are inspected at the time of construction and whenever problems are reported. Cleaning is scheduled according to the history of problems in each pipe. Some pipes are cleaned every few months.

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the sewer comprehensive plan (defined by the 1958 Plan and subsequent amendments adopted by resolution), although only two short sections of sewer line have been built. Soos Creek WSD has expanded service using pump stations to move flow out of the district and into the nearest King County interceptor. This has created a local sewer system very different from that envisioned in the 1958 Plan and its amendments. In general, pump stations are located along alignments defined by the 1958 Plan. The urban growth area boundary has significantly reduced the Soos Creek WSD service area and the 1958 Plan basin area.

KING COUNTY CONVEYANCE SYSTEM IMPROVEMENT PROJECT

MILL CREEK / GREEN RIVER SUBREGIONAL PLANNING AREA

TASK 230 REPORT

EXISTING CONDITIONS

February 2000



KING COUNTY
Department of Natural Resources

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INTRODUCTION

This section characterizes the physical and natural environment, known sensitive areas, and the general natural resources located in the Mill Creek/Green River (MC/GR) Subregional Planning Area. This planning and project identification effort includes a description of geological, biological, and other environmentally sensitive conditions in the planning area that may affect construction of conveyance systems to extend current service capabilities. Current and future land use and growth conditions in the planning area are also briefly identified. Information used to prepare this section includes relevant data from the cities of Auburn, Algona, Black Diamond, Covington, Kent, Maple Valley, and Pacific; Soos Creek Water and Sewer District; King and Pierce counties; Puget Sound Regional Council; and various consultant reports.

NATURAL ENVIRONMENT

King County requires protection of the natural environment and public health and safety in the county through its Environmental Sensitive Areas regulations (KCC 21A.24). The sensitive areas regulations contain development standards regarding wetlands; streams; erosion, flood, and seismic hazard areas; and other environmental sensitive areas. Local jurisdictions in King County are also required to develop and implement sensitive areas ordinances within their municipal boundaries. Wastewater system planning and construction of conveyance systems and facilities in the MC/GR must occur in accordance with the requirements of these regulations and ordinances. A composite of sensitive areas identified by King County in the MC/GR is shown in Figure 230-1. Sensitive areas and other natural resources in the MC/GR are discussed in the sections below.

EARTH/GEOLOGICAL FEATURES

TOPOGRAPHY AND SOILS

Topography varies throughout the MC/GR. The majority of the western part of the planning area is flat, especially in western Auburn and Kent, the Green River valley, Algona, and Pacific areas. East and north of the Green and White rivers, elevations on the undulatory terrain of the Soos Creek Plateau are generally several hundred feet higher than elevations in the river valleys. The planning area also includes some steep slopes and hillsides, especially along the fringes of the valleys of the Green River, White River, and Big Soos Creek. Steep slopes are also found on Kent's East Hill and West Hill. Planning area geology and soils, including seismic-, landslide-, and erosion-prone sensitive areas, are shown in Figure 230-2.

The Green River meanders through the western portion of the MC/GR, eroding the valley walls at some points while depositing gravel bars and overbank sediments in others; in places, the hill slopes fail by landsliding and are cut by streams flowing off the plateaus.

The southwestern MC/GR in the Pacific/Algona vicinity is located in an area of diverse topography, ranging from forested hills to flat prairie and peat bogs. The majority of the area lies in a valley and is generally very flat, with elevations on the valley floor ranging from approximately 50 to 90 feet above mean sea level. The area's landscape is the result of glacial activity that left thick glacial recessional outwash deposits. The predominant soil type in the area is composed of poorly draining, alluvial post-glacial deposits (Pacific 1991).

Geology in the Soos Creek area is largely the result of prehistoric glacial activity and subsequent ice retreats. The Alderwood series is the most common type in the area. This soil series includes moderately well drained gravelly sandy loams that are 24 to 40 inches deep over consolidated glacial till. The Everett series is the next most prevalent soil type in this area, but is much less common than the Alderwood series. Everett soils are gravelly and are underlain by sand and

gravel. In certain areas, primarily basins and lowlands, organic materials such as peat occur in depths up to 10 feet (SCWSD 1996).

The southeastern MC/GR in the Black Diamond area consists largely of the plateau north of the Green River, ranging from 300 to 750 feet in elevation. Considerable horizontal and vertical variation in subsurface geology, subsoil, and foundation conditions can be expected. Extensive consolidated glacial deposits of cemented till, firm clays, and residual deposits of morainal sands and gravels and recessional outwash generally underlie the shallow surface soil mantle of the uplands. Much of the Black Diamond area was historically used for coal, sand, and gravel mining; mineral, sand, and gravel mining continue today. Peat deposits have accumulated along the courses of small creeks in the upland areas and in many of the local wetland areas. Except for the area with peat deposits, the soils in this area should be generally favorable for pipeline bedding (Metro 1970).

EROSION HAZARDS

The susceptibility of any soil type to erosion depends on the physical and chemical characteristics of the soil, its vegetative cover, slope length and gradient, intensity of rainfall, and the velocity of surface water runoff. Erosion hazard areas are scattered throughout the MC/GR. These areas include along much of the north and east sides of the Green River valley; west of Mill Creek in Auburn on the valley slopes; along Big Soos Creek and SR 18 east of Kent; in the Pipe/Lucerne and Wilderness lakes vicinity; along the White River to the south, and in smaller areas throughout the planning area (see Figure 230-2). However, most of the larger erosion areas in this part of the region are located outside of the MC/GR.

Activities associated with clearing, grading, and construction can potentially contribute to erosion and sedimentation. Proper erosion and sedimentation control measures should be implemented during construction to minimize construction impacts. Following construction, the site should be stabilized and revegetated, and drainage systems should be installed to further minimize any long-term erosion and sedimentation and related impacts.

LANDSLIDE HAZARDS

Landslide hazard areas are areas that have slopes greater than 15 percent, impermeable soils, and groundwater seepage. Areas with a history of rapid stream incision, stream bank erosion, or undercutting by wave action, as well as areas with a geological history that would indicate landslide susceptibility, are also designated as landslide hazard areas. Landslide hazard areas in the MC/GR are generally located along water bodies and steep slopes. These areas include west of Mill Creek in Auburn on the valley slopes; on the east slopes of the Green River valley; along Big Soos Creek and SR 18 east of Kent and further north along Soos Creek in the Gary Grant Soos Creek Park vicinity; and in the Maple Valley area south and west of the Cedar River (see Figure 230-2).

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Figure 230-1. Sensitive Areas in the MC/GR

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Figure 230-2. Geology and Soils in the MC/GR

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SEISMIC HAZARDS

Seismic hazard areas are subject to severe risk of earthquake damage because of settlement or soil liquefaction. These conditions occur in areas underlain by soils with low cohesion and density, and are usually associated with a shallow groundwater table. When shaken by an earthquake, these soils can lose their ability to support loads. Loss of soil strength can also result in failure of the ground surface and damage to or collapse of structures supported in or on the soil. Loose, water-saturated materials are the most susceptible to ground failure due to earthquakes.

Seismic hazard areas are located throughout the planning area, primarily along major water bodies. The most notable areas include several large areas along and near Mill Creek and the Green River in Auburn; along much of Big Soos Creek; and south and west of the Cedar River in the Maple Valley area (see Figure 230-2). Much of the area east of the Green River has been classified as having a low or low to high liquefaction susceptibility. The majority of the area between the Green River and Mill Creek, however, has been identified as having a high liquefaction susceptibility (Gary Struthers Associates et al. 1998).

WATER FEATURES

Rivers, lakes, streams, wetlands and other surface water bodies and features are located throughout the MC/GR. The majority of the planning area is located in the Green River Watershed but also includes part of the northwest portion of the White River Watershed. Surface water features in the MC/GR are identified in Figure 230-3 and discussed briefly below.

SURFACE WATER BASINS AND STREAMS

The MC/GR is located within several King County surface water drainage basins, including the Black River, Mill Creek, White River, Middle Green River, Lower Green River, Soos Creek, Jenkins Creek, and Covington Creek basins (Figure 230-4). The primary rivers, streams, and creeks in the planning area are discussed below.

The Green River originates in the Cascade Mountains northeast of Mount Rainier, and flows west and north before emptying into Elliott Bay as the Duwamish River. Two major tributaries and ten small tributaries feed into the main river in the upper valley between Black Diamond and Auburn. The gradient is generally shallow in this stretch, dropping only 100 feet over this 16-mile section (WDF 1975). The “middle section” of the Green River runs primarily through eastern Auburn and north through Kent in the western half of the MC/GR. Big Soos Creek (see below) is the major tributary to the Green River along this stretch of the river.

The White River arcs through the southwest MC/GR, flowing from east to west through the Muckleshoot Indian Reservation on the east, through Auburn and the community of Stuck, then heading south through Pacific and into Pierce County to its confluence with the Puyallup River near Sumner. Originating on Mount Rainier, the White River is a glacial stream that has been

highly channelized and diked for flood control. Hillsides rise steeply to around 400 feet, especially along the northeast section of the river and then again a little farther to the south and west. Bowman Creek is the largest tributary to the White River in the planning area.

Mill Creek runs through the far western part of the MC/GR. The creek originates from Lake Doloff and Lake Geneva on the Mill Creek drainage basin's western plateau, west of the Green River valley and immediately west of the MC/GR. Mill Creek flows east from these lakes, down Peasley Canyon in Auburn, and then north through the valley floor into the Green River. The mainstem channel of Mill Creek is approximately 8.35 river miles long (Herrera 1997).

The Soos Creek system is located in the north-central and eastern areas of the MC/GR. The system is composed of over 60 miles of stream extending out in a fan shape from the hills east of Auburn and south of Renton between the Cedar River and Green River valleys. Big Soos Creek originates from springs and groundwater drainage in the hills 1.5 miles south of Renton. The creek drains south to where Covington Creek joins the system, then westward to its confluence with the Green River near SR 18.

Five major tributaries feed Big Soos Creek. Soosette Creek originates from springs and drainage runoff on the plateau between Lake Meridian and the town of Kent and steeply drains 5 miles south to Big Soos. Covington Creek originates on the plateau 2.5 miles east of Lake Sawyer and drains 9.5 miles southwest to Big Soos. Jenkins Creek is located in the central and northeast areas of the MC/GR. The creek starts at Lake Wilderness Park, Lake Lucerne, and Shadow Lake and drains 6.5 miles southwest to Big Soos near the Kent-Black Diamond road in the Berrydale community. Jenkins Creek is also fed by Cranmar Creek, a small creek that flows west from near the Elk Run Golf Course between Pipe Lake/Lake Lucerne and Lake Sawyer. Little Soos Creek flows south from Lake Youngs, located north of the MC/GR, for nearly 5 miles. Finally, an unnamed tributary originating in Kent flows southeast through Clark Lake and Lake Meridian and into Big Soos Creek, south of its convergence with Little Soos Creek near SR 18 (WDF 1975).

LAKES

Several large lakes are located within the central and eastern portions of MC/GR. Lake Meridian is located east of the Kent city limits and immediately north of the Kent-Kangley Road (SR 516). The lake is nearly 1 mile long, covers 150 acres and drains approximately 742 acres. The depth of the lake averages approximately 41 feet with a maximum depth of 90 feet. Recent water quality data indicate that Lake Meridian has low biological productivity (King County DNR 1998). The lake drains southwest toward Soos Creek. The lake has both park access (Lake Meridian Park) and boat launch facilities.

Pipe Lake and Lake Lucerne are located in the eastern MC/GR, north of the Kent-Kangley Road and west of Witte Road SE. Pipe Lake and Lake Lucerne are actually one body of water. Pipe Lake covers approximately 52 acres and drains approximately 314 acres. It has a mean depth of 27 feet and a maximum depth of 65 feet. Lake Lucerne covers approximately 16 acres and drains approximately 403 acres. It has a mean depth of 18 feet and a maximum depth of 37 feet.

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Figure 230-3. Surface Water and Wetlands in the MC/GR

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Figure 230-4. Drainage Basins in the MC/GR

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Both Pipe and Lucerne lakes have low biological productivity, but have shown some improvement in recent years (King County DNR 1998). The lakes are surrounded by residential development, especially to the south.

Lake Wilderness is a 69-acre lake located in the unincorporated Wilderness community south of Maple Valley, northeast of Pipe Lake/Lake Lucerne and west of the Maple Valley-Black Diamond Road (SR 169). The lake averages 21 feet deep with a maximum depth of 38 feet. The lake drains approximately 420 acres. Recent water quality data indicate that Lake Wilderness is characterized by a medium level of biological productivity (King County DNR 1998). King County's 108-acre Lake Wilderness Park is located along the northwest shore of the lake and has boat launch facilities.

The Lake Sawyer system is located in and around the city of Black Diamond. The system includes Ravensdale Lake, Ravensdale Creek, Rock Creek, Black Diamond Lake, Jones Lake, and smaller tributaries. Black Diamond Lake and Jones Lake drain into Rock Creek, which flows north into Lake Sawyer. Ravensdale Lake drains into Ravensdale Creek, which flows southwest into Lake Sawyer. Covering 279 acres, Lake Sawyer is the largest lake in the MC/GR. It has an average depth of 26 feet and a maximum depth of 58 feet. Its drainage basin includes 8,300 acres, most of which is in forest. Lake Sawyer exhibits a medium level of biological productivity (King County DNR 1998). Residences are located along most of Lake Sawyer's 7 miles of shoreline. The lake is used extensively for recreation, including fishing, boating, sailing, and swimming (Metro 1990). Lake Sawyer Park is located along the lake's western shore. The city of Black Diamond annexed Lake Sawyer and surrounding homes on January 1, 1998.

Several smaller lakes are also located in the planning area. White Lake is located on the Muckleshoot Indian Reservation, south of SR 18 and east of Harvey Road SE. Lake Jolie is located immediately west of Gary Grant Soos Creek Park in eastern Kent in the north-central planning area. Lake Marjorie, Mud Lake, Black Diamond Lake, and Jones Lake are located in Black Diamond in the southeasternmost area of the MC/GR. Black Diamond and Jones lakes are connected to Lake Sawyer through Rock Creek.

SHORELINES

Some streams and lakes in the MC/GR are designated as "shorelines of the state" (i.e., Class 1) under Washington's Shoreline Management Act (RCW 90.58) and King County and local shoreline master programs. These water bodies include the Green River, most of the White River, lower Big Soos Creek, part of Jenkins Creek, Lake Meridian, Pipe Lake/Lake Lucerne, Wilderness Lake, Lake Sawyer, and Jones Lake. Development within 100 feet of these shorelines is generally prohibited or severely restricted. Other water bodies in the MC/GR are considered Class 2, including Mill Creek, part of the White River, upper Big Soos Creek, Little Soos Creek, part of Jenkins Creek, Rock Creek, Mud Lake, and Black Diamond Lake. Development within 50 feet of Class 2 shorelines is prohibited; Class 2 waters known or thought to be salmon-bearing have a 100-foot buffer.

Any alteration of a shoreline of statewide significance can be difficult and must be consistent with each local jurisdiction's sensitive areas ordinance and shoreline master plan. Urban development along shorelines in the MC/GR vary widely; the largest concentrations of residential and commercial development are located on the west side of the Green River in Auburn; north of the White River in Pacific and Auburn; surrounding Lake Meridian; and south of Lake Lucerne.

FLOOD HAZARD AREAS

Flood hazard areas are those areas of King County subject to inundation by the 100-year flood. These are areas that have a 1-percent probability of inundation in any given year. Streams, lakes, wetlands, and closed depressions all have floodplains that may qualify as flood hazard areas (King County 1990). Development in flood hazard areas is restricted or prohibited depending on the type of flood area (e.g., flood fringes, zero-rise floodways, or FEMA floodways). Flood hazard areas in the MC/GR planning area are located along parts of Mill Creek; much of the Green River, including a large area southeast of the large oxbow east of SR 167; most of Big Soos Creek; Little Soos Creek; and lower Jenkins Creek (see Figure 230-1).

WETLANDS

Wetlands are unique environments comprised of diverse terrestrial and aquatic habitats. Biological habitat support refers to a wetland's provision of nesting, breeding, rearing, and feeding habitat for aquatic and terrestrial wildlife species. Wetlands and wetland systems within the MC/GR offer pockets of habitat for urban wildlife and wetland-dependent plant and animal species. A wetland's size, water quality, diversity of habitat, and habitat structure affect performance and function.

Building in wetlands and in established wetland buffers is restricted, and requires approvals and permits from the local jurisdiction and possibly the U.S. Army Corps of Engineers. A review of existing information, including the King County Sensitive Areas Map Folio and NWI wetland maps, indicates that wetlands are located throughout the MC/GR (see Figure 230-3). The map folio indicates that approximately 90 to 100 wetlands of various sizes are located in the unincorporated parts of the planning area, including the water bodies identified in the previous sections. The largest concentrations are located in the Soos Creek basin in the vicinity of Lake Meridian and along Big Soos Creek; NWI maps and recent studies conducted for specific projects in the planning area also indicate that many additional wetlands are also scattered throughout the planning area, especially along Mill Creek and SR 167 and in the Black Diamond area. The NWI maps and other studies will be consulted more closely when specific routes of conveyance pipes are identified for further study.

FISH AND WILDLIFE

The creeks and streams in the MC/GR provide wildlife corridors for small mammals, migratory waterfowl, perching birds, amphibians, snakes, and water-dependent species. Land use around some lowland creeks, such as Mill Creek, provide poor buffers because of surrounding livestock pastures, plowed agricultural fields, and major highways. Culverted sections of some of these streams through urban or other developed areas divide and fragment their use as migration corridors.

Federally and state threatened, endangered, priority, and other species of concern are present in King County and can be found in certain areas of the MC/GR. Fish species of concern include Chinook, coho, sockeye, chum, and pink salmon; steelhead trout, bull trout; and Dolly Varden. Kokanee, searun cutthroat trout, rainbow trout, and many other species of resident fish can also be found in streams and lakes throughout the planning area. The recent listing of certain Puget Sound area salmon and steelhead runs on the federal Endangered Species List now requires that most development around these water bodies be carefully planned and that detailed biological assessments identifying impacts on listed species and their habitat be conducted.

Amphibians of concern in the project area may include the Cascades frog, red-legged frog, tailed frog, Oregon spotted frog, western toad, Van Dyke's salamander, northwestern salamander, long-toed salamander, Pacific Giant salamander, Cascade torrent salamander, western redback salamander, and roughskin newt. Reptiles of concern include the western pond turtle. Birds of concern include the bald eagle, common loon, harlequin duck, great blue heron, osprey, and willow flycatcher. Mammals of concern include the northern water shrew and masked shrew (Seattle 1999). The occurrence in the MC/GR of species generally found in old growth forest areas, such as northern spotted owl, marbled murrelet, a variety of bat species, and others, is possible but not likely. The Washington Department of Fish and Wildlife's Priority Habitats and Species program and data will be consulted to more accurately determine locations of listed and priority species when specific conveyance routes are identified.

VEGETATION

Vegetation throughout the MC/GR varies considerably. Vegetation in the low-lying Green River valley in the western part of the planning area consists predominantly of grasses and deciduous trees associated with the lowlands and the more urbanized areas of Kent, Auburn, Pacific, and Algonia. Despite development throughout much of the planning area, some highly vegetated areas still exist. The central and eastern parts of the MC/GR on the Soos Creek Plateau and into Black Diamond are generally a more forested mix of coniferous and deciduous trees. Covington Creek basin, for example, is still largely in second-growth forest with overhead canopy and streamside vegetation still intact. The forested areas provide excellent habitat for a variety of bird, mammal, amphibian, and reptile species. The cutting of vegetation and habitat, especially when associated with sensitive areas such as streams, wetlands, and erosion hazard areas, typically requires approvals from the county or city jurisdictions under their sensitive areas ordinances.

LAND USE AND GROWTH

This section describes existing and potential changes in land use practices and forecasted growth within the MC/GR. This assessment is based on forecasted changes in the population and the distribution of residential, commercial, and industrial development in the area. Planned sewerage conveyance systems are discussed in the comprehensive sewerage plans of the cities of Kent, Auburn, Black Diamond, and Pacific, and the Soos Creek Water and Sewer District (see Section 210 of this document). Other existing and proposed land use information is also derived from these documents and the King County Comprehensive Plan. Understanding these land use and growth areas within the MC/GR will help the County plan its sewer conveyance system requirements through the area. Current land use in the MC/GR is shown in Figure 230-5.

The Metropolitan King County Council established an Urban Growth Area (UGA) in the 1994 King County Comprehensive Plan and its 1995 amendments. The King County plan requires future growth and development to be confined to the UGA to limit urban sprawl, enhance open space, protect rural areas, and provide for more efficient use of human services, transportation, and utilities. The King County plan includes capital facilities and utilities elements that identify the county's regional wastewater conveyance and treatment system and facilities. The plan also identifies a review and approval process for sewer plans within the county. Each local service agency in the MC/GR (except for Algona) has developed and adopted sewer plans (or is incorporated as part of another LSA plan) in accordance with the King County Comprehensive Plan. Incorporated cities in the planning area—Kent, Auburn, Algona, Pacific, Covington, and Black Diamond—also have urban growth boundaries within which development must be contained.

The Puget Sound Regional Council (PSRC) prepares long-range population, household, and employment forecasts for the four-county Puget Sound region (King, Kitsap, Pierce, and Snohomish counties). These forecasts are prepared to ensure a general consistency with local comprehensive plans developed under GMA guidelines. Population in the region is expected to increase by nearly 1.2 million people between 1995 and 2020, a 25-year increase of approximately 39 percent, or 1.3 percent per year. The greatest growth is projected to occur in King County (an additional 472,673 residents). King County is projected to have about half of the total regional population in 2020.

Local population forecasting is done by first forecasting population, employment, and income for the Puget Sound region as a whole and then allocating these forecasts among small geographic areas, called forecast analysis zones (FAZs). FAZs generally approximate existing boundaries, such as municipal jurisdictions and community planning areas, and are therefore useful in helping predict growth in specific areas of the region. Expected growth in the MC/GR varies, but is substantial in some areas. Overall, FAZs in which the MC/GR is partially or completely located (Figure 230-6) are expected to see an additional 38,465 households (47 percent increase), 79,267 residents (35 percent increase), and 29,065 jobs (28 percent increase) between 1997 and 2020 (PSRC 1999). The largest household and population increases (as a percentage) between 1997 and 2020 are expected to occur in the Lake Tapps/Dieringer, Southwest Soos Creek, and

Algona/Pacific FAZs. Total employment percentages are expected to increase most in the Lake Tapps/Dieringer, Sumner, Southwest Soos Creek, Lake Youngs, Lake Meridian, and Kentridge FAZs. Current (1997) and projected household, population, and employment growth by FAZ in the MC/GR is shown below in Table 230-1.

Table 230-1. Current and Projected Household, Population, and Employment Growth by Forecast Analysis Zone in the MC/GR.

Forecast Analysis Zone	Total Households			Total Population			Total Employment		
	1997	2020	% Change	1997	2020	% Change	1997	2020	% Change
806 (Lake Tapps/Dieringer)	4,890	9,924	103	14,996	29,052	94	1,190	2,945	147
900 (Sumner)	3,378	4,303	27	8,425	10,365	23	5,920	11,130	88
3030 (Lakeland)	9,439	12,175	29	27,686	32,301	17	5,522	6,755	22
3110 (Algona/Pacific)	2,576	4,452	73	7,000	11,073	58	3,469	4,248	22
3120 (Auburn South)	8,141	12,194	50	20,981	28,389	35	18,992	19,605	3
3310 (Black Diamond/Lake Sawyer)	4,086	5,696	39	11,876	15,005	26	1,069	1,754	64
3320 (Covington/Timberlane)	6,953	8,761	26	21,772	24,992	15	2,316	3,161	36
3413 (Lake Youngs)	2,159	3,361	56	6,243	8,834	42	663	1,638	147
3414 (Kentridge)	7,670	9,943	30	21,912	25,822	18	2,135	3,919	84
3425 (Lake Heights)	4,509	6,771	50	13,946	19,077	37	1,712	2,258	32
3426 (SW Soos Creek)	4,056	7,117	75	12,526	20,212	61	1,842	3,729	102
3427 (Lake Meridian)	5,436	8,145	50	15,900	21,739	37	2,606	4,893	88
3505 (Kent CBD/Kent Hill East)	13,190	20,073	52	30,981	43,374	40	13,274	18,782	41
3600 (Kent Industrial)	5,885	7,918	35	13,708	16,984	24	41,896	46,854	12
<i>Total/Avg. Change</i>	<i>82,368</i>	<i>120,833</i>	<i>47</i>	<i>227,952</i>	<i>307,219</i>	<i>35</i>	<i>102,606</i>	<i>131,671</i>	<i>28</i>

Source: Puget Sound Regional Council data, June 1999.

In addition to the FAZ data, other information provided by cities and sewer districts in the MC/GR planning area give an indication of expected growth and land use in their areas. The City of Auburn bases their land use and growth estimates on the 1992 King County Countywide Planning Policies. The City of Auburn estimated approximately 7,000 additional dwelling units and 11,000 additional jobs in the city between 1992 and 2012. According to Auburn's comprehensive plan released in 1995, developed land uses in the city represent about 70 percent of the city's total acreage (Auburn 1995). According to city planners, major areas of growth in Auburn include the city's northeast corner (the 277th Street/"Drive-In" area, where there are approximately 450 acres of vacant, developable land and an expected increase of 1,500 to 2,000 housing units by 2015; the Miles Sand and Gravel/White Lake area, where 500 to 1,000 new housing units are expected by 2015; and the Lakeland Hills/Terrace View Apartments area in Pierce County, where 3,500 new housing units are expected by 2015 (Sokol 1999 personal communication). Auburn has already begun the process of annexing the currently unincorporated Lee Hill area east of the city. This 5.5-square-mile area currently has approximately 9,000 residents and a total of 15,000 are expected over the next 10 years. City planners believe that the city will be completely built out by 2015 (Sokol 1999 personal communication).

The City of Kent generally relies on the latest PSRC data in estimating future growth in the city. The majority of Kent's growth may occur in the downtown urban center area (FAZ 3505), where

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Figure 230-5. Current Land Use in the MC/GR

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Figure 230-6. Forecast Analysis Zones in the MC/GR

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1,000 new housing units are expected by 2015 (O'Neill 1999 personal communication). The City is planning a significant update of its comprehensive plan in the next 12 to 18 months, largely because of significant areas that have been annexed over the last several years. It is possible that Kent may be looking to annex the northeast part of its potential annexation area (PAA), that is the area north of 240th Street and east of 116th Avenue (O'Neill 1999 personal communication). This area would be in the MC/GR; however, no annexation plans are currently underway.

The city of Algona has little room for significant growth. With a population of just over 2,000, Algona expects primarily small numbers of single family homes to account for most of its future growth. The city is currently evaluating a developer's proposal for the last remaining large plat in the city; all remaining vacant property in Algona is short platted (Pullar 1999 personal communication). The city of Pacific (estimated population 5,700 in both King and Pierce counties) is somewhat larger than Algona and has more development potential. Based on a moderate-level estimate, Pacific could see a population of 8,000 by 2014. Most growth is expected to be in-fill, but there is a fair amount of potential commercial and industrial growth in the newly annexed, 400-acre section of the city located in Pierce County (Wise 1999 personal communication).

The Soos Creek sewer district planning area population is expected to increase from 62,887 in 1995 to 79,213 in 2015 or 26 percent (SCWSD 1996). The urban unincorporated portions of Soos Creek and Tahoma Raven Heights are expected to receive approximately 51 percent (12,000 to 15,000 employees) and 4.7 percent (1,100 to 1,400 employees) respectively of the total unincorporated King County area employment growth. The District will probably see an increase in some neighborhood businesses including retail stores offices and community services; regional businesses; and some industrial development (SCWSD 1996).

The newly incorporated City of Covington is currently preparing their first comprehensive plan. Covington has a current population of approximately 13,000. There is a substantial amount of growth expected around the Pipe Lake area. Almost all growth is expected to be residential and will take place as soon as potable water is available (expected soon). Large, undeveloped parcels are available on both sides of 204th Avenue SE and SE 256th Street. Growth is also expected east of 180th Avenue SE. Several multi-family developments have been proposed in the city. No further annexation is expected as the city is already pushed to the limits of its urban growth boundary (Korve 1999 personal communication).

Black Diamond has annexed some significant land over the last few years, including Lake Sawyer and the surrounding residential area northwest of the city and the area around Black Diamond Lake southwest of the city. The original city limits (pre-comprehensive plan and pre-annexation) includes residential areas primarily grouped in three general areas. Commercial development is also dispersed in three general areas, most notably along SR 169. A large part of city land is undeveloped, developed with low density, or not developed at the current potential allowed by zoning (Black Diamond 1995). Of the total 3,048 acres of pre-annexed Black Diamond, 1,074 acres are zoned for mineral extraction and forestry. Approximately 390 acres of this land are capable of conversion to other zone classifications, suggesting that residential, business park, and light industrial land use in Black Diamond may increase in the future. The recently annexed areas are nearly all residential.

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